REMARKS

Reconsideration and allowance are respectfully requested.

Claims 1-2 are pending in the application.

Claim 1 stands rejected under 35 USC § 102(b) as being anticipated by Cyb '661. Applicant respectfully traverses this rejection.

Claim 1 is directed to a method for manufacturing a combustion chamber of a gas-turbine engine. As discussed in the specification, such a combustion chamber requires high strength and high thermal resistance and must be manufactured from materials that retain high strength at the high temperatures to which the combustion chamber is exposed. It is known to manufacture combustion chamber components from certain high temperature nickel-based casting alloys, such as C263 or IN718. Such nickel-based alloys have a generally high temperature resistance and are weldable by conventional methods.

However, the environment of the gas-turbine combustion chamber exposes the nickel-based alloys that are weldable by conventional methods to temperatures that approach operating temperature limit of such alloys. It is therefore desirable to manufacture gas-turbine combustion chamber components from even more highly temperature resistant alloys. Certain types of nickel-based casting alloys, such as C1023 are even more highly temperature resistant than the alloys such as C263 or IN718. For instance, the safe operating temperature of C1023 is more than 150° C higher than for C263 or IN718. However, these more highly resistant nickel-based alloys, unlike the less temperature resistant nickel-based alloys, cannot be welded by conventional methods without cracking or degradation of the crystal structure. Such highly-temperature resistant nickel-based alloys can be referred to as conventionally non-weldable nickel-based alloys.

To the extent that prior art combustion chamber components were successfully welded from nickel-based alloys, they were welded from lower temperature resistant nickel-based alloys that are weldable by conventional methods. Prior to the present invention, it has not been possible to manufacture gas turbine combustion chambers from the more highly temperature resistant conventionally non-weldable nickel-based alloys. Therefore, while both

groups of alloys are nickel-based alloys, they are very different from one another. The claimed invention is directed only to the group of conventionally non-weldable nickel-based casting alloys. Claim 1 has been amended to require that the method include "casting a plurality of individual wall sections from a conventionally non-weldable high-temperature nickel-based casting alloy". Claim 1 correspondingly has been amended to remove from the preamble the reference to the "plurality of individual cast wall sections constructed of a high-temperature alloy". These amendments are believed to overcome the Examiner's position in paragraph 6 of the Office Action with respect to the patentable weight of the preamble.

Cyb discloses the laser welding of automotive exhaust manifolds. While the exhaust manifold is exposed to high temperatures, the manifold is not required to endure high mechanical stress and the mechanical failure of the manifold, while undesirable, is substantially less significant than the mechanical failure of a combustion chamber of a gas turbine suitable for use in an aircraft. There is no disclosure that the exhaust manifold be manufactured from a material retaining high strength at a high temperature. Cyb teaches that cast manifold sections can be joined by laser welding, tig welding or the like. See col. 4, lines 35-42 (emphasis added).

While the specific alloys of the cast manifold components are not disclosed, by teaching that such components can be joined by the standard method of tig welding, Cyb thus teaches that alloys be used that are weldable by such a method. Cyb does not teach or suggest the use of conventionally non-weldable high temperature nickel-based alloys nor does he teach or suggest the laser welding of such conventionally non-weldable high temperature nickel-based alloys. Further, Cyb actually teaches away from use of high temperature alloys by teaching the use of an alternative manner of dealing with high temperatures. Instead of manufacturing the manifold from a material retaining high strength at high temperatures, Cyb deals with the high temperatures by coating the interior of the manifold with a temperature resistant material to reduce heat exposure to the metal of the manifold. The invention disclosed in Cyb is contrary to the use of conventionally non-weldable high temperature nickel-based alloys.

In view of the above, Cyb does not teach or suggest the present invention as claimed in independent claim 1 and it is respectfully requested that this rejection be withdrawn.

Dependent claim 2 is allowable for the reasons given above and for the further limitations contained therein.

An IDS, Form PTO-1449 and the references cited therein are forwarded herewith. These references were cited in the counterpart German and European search reports, (copies of which are forwarded herewith). None of these references, alone or in combination with any other references of record disclose or suggest the claimed invention as discussed above.

All objections and rejections having been addressed, it is respectfully submitted that the present application is in condition for allowance, and such a Notice earnestly solicited. If any points remain in issue, the Examiner is requested to telephone the undersigned at the number below.

Respectfully submitted,

Timothy J. Klima
Reg. No. 34,852

The Law Offices of
Timothy J. Klima
One Massachusetts Avenue NW
Suite 330
Washington DC 20001
202-289-2556 Phone
202-408-8620 Fax

APPENDIX

(Claims With Markings To Show Changes Made)

1. (Twice Amended) A method for manufacturing a combustion chamber of a gas-turbine engine [which comprises a plurality of individual cast wall sections constructed of a high-temperature alloy], comprising:

casting a plurality of individual wall sections from a conventionally non-weldable high-temperature nickel-based casting alloy;

joining the individual wall sections by laser welding to make up the combustion chamber.